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GB A 2087170

GB A 2073508

GB A 2059691

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GB 1528348

GB 1430027

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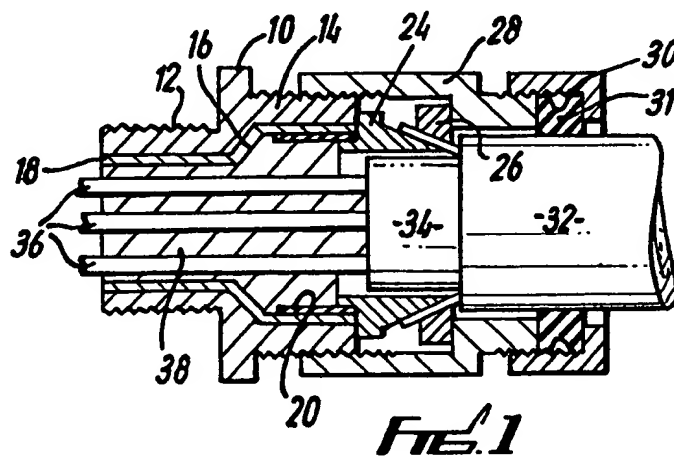
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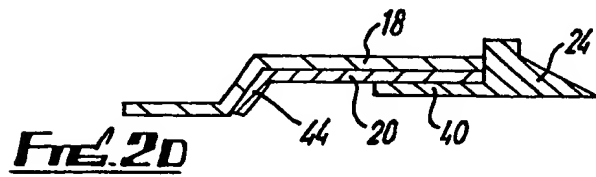
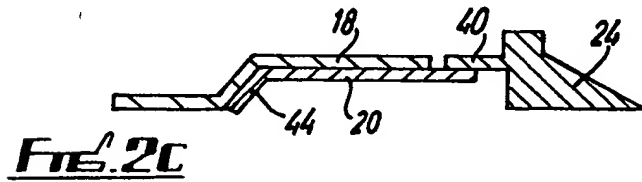
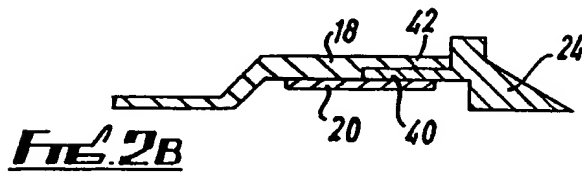
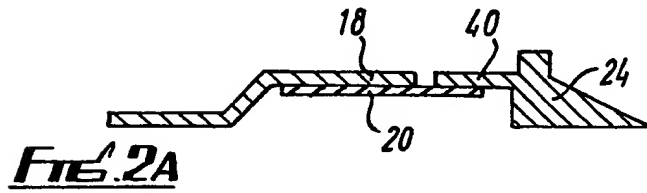
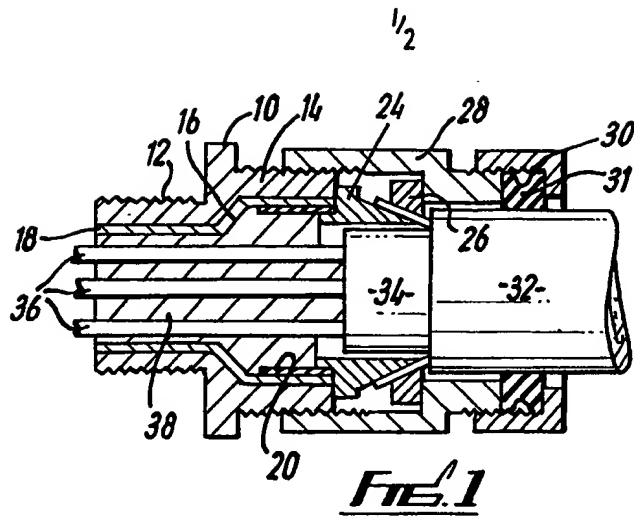
(54) Electrical cable barrier

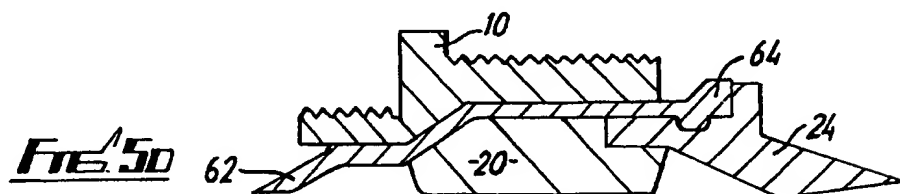
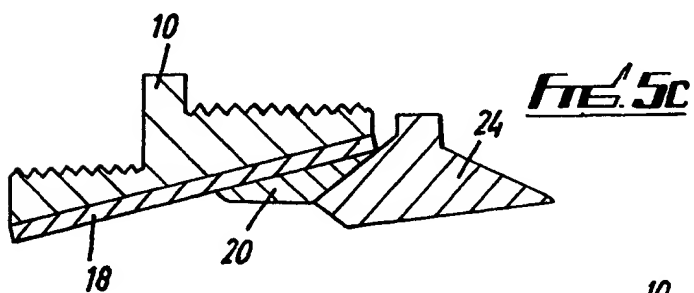
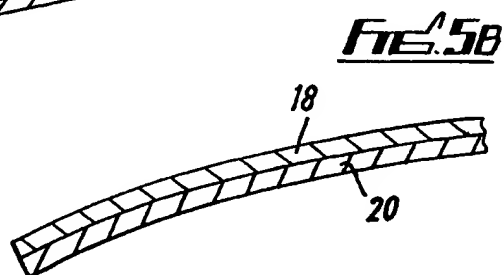
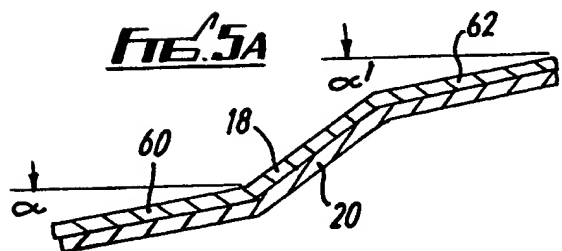
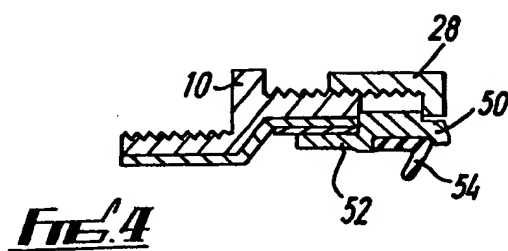
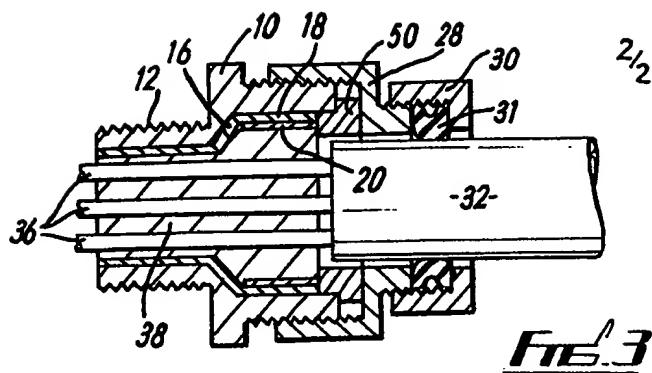
(57) British Standards 4683 and 5501 of 1971 set out the limits on the gap between unthreaded surfaces in a cable gland or barrier. With metal parts careful machining is required to meet these tolerances. The present invention provides a deformable, preferably over-size sleeve (18) in the body (10) of a cable barrier whereby a seal is formed between said sleeve and said body. A rigid support sleeve 20 may be disposed inside the deformable sleeve.



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SPECIFICATION

Electrical cable barrier

- 5 This invention relates to a barrier gland for electric cables.

Barrier glands are cable glands in which a barrier is formed around the cable or cable cores by a hardenable filler compound. Typical barrier glands are described in our British Patent Specifications Nos. 1528347 and 1528348. In one form of barrier gland a sleeve or lining of rigid material, usually metal is provided in the gland for containing the filler compound. Such a lining enables the gland parts to be moved relative to the filler compound after the filler compound has hardened to enable the gland to be "made off".

One of the problems with a metal liner is that it must be produced to very close tolerances. If the liner is too big it will not fit within the appropriate gland parts. If it is too small then the gap between it and the surrounding gland part may be so large as not to comply with the requirements of British Standards Nos. 4683 and 5501 of 1971 parts 1 and 5 which place limits on the gap between unthreaded surfaces in a cable gland.

The present invention has been made with this problem in mind.

According to the invention there is provided a cable barrier comprising a hollow body part through which the cable or the individual insulated or uninsulated conductors of the cable extend, a sleeve or lining located at least in part within said hollow body part, at least a part of said sleeve or lining being made of deformable material, a second hollow part engageable with said first body part to deform said sleeve or lining thereby creating a seal between said first part and said sleeve or lining and between said sleeve or lining and filler compound disposed in said sleeve or lining and around the conductors when the cable barrier is in use.

By using a deformable sleeve or lining the invention overcomes both of the major problems outlined above. Such a deformable part can be made to much wider tolerances than a rigid part, and the relaxation of tolerances means that the part can be made more cheaply, for example by moulding instead of by turning as is the case with rigid parts. In addition because the sleeve or lining now forms a seal with the surrounding gland part, there is no gap between the parts and, therefore, the requirements of British Standard No. 5501 are met and British Standard No. 4683 of 1971 does not apply.

The sleeve or lining comprised in the invention is, as stated, of deformable material which will form a seal with the surrounding gland part. Many different kinds of material can be used for example natural or synthetic rubber or plastics. The sleeve or lining preferably

has an external shape which, at least in part, corresponds to the gland part in which it is to be located. It is advantageous if the sleeve or lining is, at least in part, slightly larger than the gland but in which the sleeve or lining is received so as to ensure that deformation of the sleeve or lining takes place and that a seal is formed.

Specific embodiments of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a sectional side elevation of one form of cable barrier according to the invention;

Figure 2A to 2D illustrate modified forms of sleeve or linings;

Figure 3 is a sectional side elevation of another cable barrier intended for use with unarmoured cable;

Figure 4 shows a modification of a part of the embodiment of Fig. 3; and

Figure 5A to 5D illustrate further modified forms of sleeve or lining.

In the drawings, like parts of the different embodiments have been given the same reference numerals.

Referring to Fig. 1 the cable barrier comprises a hollow body 10 threaded externally at one end 12 for reception in the tapped hole of a junction box or other electrical fitting. A counterbore 14 is formed at the other end of the body thereby defining a shoulder 16 within the body 10. As illustrated the shoulder is inclined to the longitudinal axis of the body but that is not essential; it may be perpendicular to the axis if desired.

A sleeve or lining 18 of deformable material is located in the body 10. In the illustrated embodiment the sleeve 18 is shaped so as to correspond with internal shape of the body but that is not essential provided that a seal can be formed between the sleeve and the body.

An inner support sleeve 20 of rigid material is located inside the sleeve 18. In the embodiment of Fig. 1 the support sleeve 20 extends along the counterbore. However, if desired the sleeve 20 may extend over the shoulder 16 and along the bore of the body 10.

The remainder of the cable barrier is of conventional design. In the embodiment shown in the Fig. 1 armour clamping rings 24 and 26 are adapted to be urged together by tightening cap 28 on the body 10. An end cap 30 is engageable on the cap 28 to compress a seal 31 onto the outer sheath 32 of the cable.

In use the cable sheaths inner 34 and outer 32 are cut back to expose the conductors 36 which are arranged to extend through the sleeves 18 and 20. Filler compound 38 such as an epoxy resin is disposed in the sleeves 18 and 20 and around the cores and then the body 10 is forced onto deformable sleeve 18

by tightening of cap 28. The sleeve 18 is compressed, at least in part by the body 10, thereby forming a seal between it and the body. In addition a seal is formed between the sleeve 18 and sleeve 20 where they contact the filler compound.

As mentioned earlier the arrangement of sleeves 18 and 20 can be modified. Some examples of such modification are shown in Fig. 2. In Fig. 2A the armour clamping ring 24 has a projection 40 which extends into the body counterbore 14. The support sleeve extends across the junction between the sleeve 18 and the projection 40. In the embodiment of Fig. 2B the projection 40 is received in a rebate 42 on the underside of sleeve 18.

Fig. 2C is similar to the arrangement of Fig. 2A except that the sleeve 20 extends at 44 across the shoulder 16.

Fig. 2D is a modification of the arrangement of Fig. 2C in that projection 40 extends under both sleeves 18 and 20.

The invention may be applied to many different kinds of barrier gland and not just with barrier glands for armoured cable. A barrier gland for unarmoured cable is shown in Fig. 3. It will be seen that it is substantially the same as the embodiment of Fig. 1 except that a single ring 50 replaces the armour clamping rings 24 and 26.

The barrier gland of Fig. 3 can be modified in many ways. For example the sleeves 18 and 20 and ring 50 can be altered in the same way as for the embodiment of Fig. 1. In another variant, shown in Fig. 4, the ring 50 is formed with an internal channel 52 which receives one arm of an L-shaped seal 54 of the kind described in our Patent Specifications Nos. 1389846 and 1399396. With the embodiment of Fig. 4 the end cap 30 and seal 31 can be omitted.

As has been stated the sleeve 18 does not need to correspond precisely to the internal shape of the body 10. In practice it is preferred that the sleeve 18 should be oversized at least in part so that a seal will be formed between the sleeve 18 and body. For example as illustrated in Fig. 5A the parts 60, 62 of sleeve 18 which are received in the bore and counterbore respectively of the body are inclined to the bore and counterbore by angles α and α' . The angles α and α' may be the same or different and may for example be up to 16° .

A simplified example of modified sleeves 18 and 20 is shown in Fig. 5B and is of arcuate or curved form. Such a sleeve would be of particular use when the body is continuously tapered as shown in Fig. 5C rather than having a bore and counterbore.

Fig. 5C also illustrates another modification to the arrangement of sleeves 18 and 20 which can be applied to a body 10 with a tapered bore. In this case sleeve 20 is wedge shaped and is compressed, on tightening the

gland by the ring 24.

In the embodiment of Fig. 5D the sleeve 18 is in-turned at 62, the left hand end thereof (as viewed in the drawing). At the right hand end of sleeve 18 a thickened rim 64 is formed for engagement with the outwardly projecting flange on armour clamping ring 24. If desired the sleeve may be provided with an internal bead 66 adjacent the right hand end thereof, the bead 66 being received in a groove 68 in the ring 24.

CLAIMS

1. A cable barrier comprising a hollow body part through which the cable or the individual insulated or uninsulated conductors of a cable extend, a sleeve or lining located at least in part within said hollow body part, at least a part of said sleeve or lining being made of deformable material whereby a seal is formed between first hollow part and said sleeve or lining.

2. A cable barrier as claimed in Claim 1, wherein the sleeve or lining is adapted to form a seal with filler compound disposed in said sleeve or lining around cable conductors extending therethrough.

3. A cable barrier as claimed in Claim 1 or Claim 2, wherein the sleeve or lining has a shape which corresponds at least in part, to the internal shape of the hollow part in which said sleeve or lining is located.

4. A cable barrier as claimed in any preceding claim, wherein the undeformed sleeve or lining has external dimensions which are at least in part larger than the internal dimensions of the first hollow part in which the sleeve or lining is located.

5. A cable barrier as claimed in any preceding claim, wherein a support sleeve is located within the deformable sleeve.

6. A cable barrier as claimed in Claim 5, wherein the support sleeve is of rigid material.

7. A cable barrier as claimed in Claim 1 or Claim 6, wherein the support sleeve provides support for a part only of the deformable sleeve or lining.

8. A cable barrier as claimed in any of Claims 5 to 7 wherein the support sleeve projects beyond an end of the deformable sleeve or lining.

9. A cable barrier as claimed in any of Claims 5 to 8, wherein the projecting part of the support sleeve is adapted to engage another part of the barrier assembly.

10. A cable barrier as claimed in any preceding claim, wherein the deformable sleeve or lining is adapted to engage another part of the barrier assembly.

11. A cable barrier as claimed in any preceding claim, wherein the sleeve or lining is of non-uniform cross-section.

12. A cable barrier as claimed in Claim 11, wherein the sleeve or lining is stepped.

13. A cable barrier as claimed in Claim

11, wherein the sleeve or lining is longitudinally tapered.

14. A cable barrier, substantially as described herein with reference to the accompanying drawings.

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